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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/990,196	11/21/2001	Winston Way	26084-717	1219

20985 7590 05/07/2004

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EXAMINER	
LEUNG, CHRISTINA Y	

ART UNIT	PAPER NUMBER
2633	11

DATE MAILED: 05/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/990,196	WAY, WINSTON	
	Examiner	Art Unit	
	Christina Y. Leung	2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-84* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1-10,14,16-30,34,36-43 and 46-60* is/are allowed.

6)☒ Claim(s) *11-13,15,31-33,35,44,45 and 61-84* is/are rejected.

7)☒ Claim(s) *6,26,62,74 and 75-84* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 January 2002* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *5,9*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. In the Response to Restriction Requirement filed 11 February 2004 (paper no. 10), Applicant elected without traverse embodiment 1, corresponding to Figures 5a and 5b, but Applicant also amended the claims to include the selected feature. Claims 1-84 (please see the claim objection to "claim 85" discussed below) are therefore under consideration in this Office Action and no claims are currently withdrawn.

Priority

2. Applicant has not complied with one or more conditions for receiving the benefit of an earlier filing date under 35 U.S.C. 120 as follows:

The later-filed application must be an application for a patent for an invention which is also disclosed in the prior application (the parent or original nonprovisional application or provisional application); the disclosure of the invention in the parent application and in the later-filed application must be sufficient to comply with the requirements of the first paragraph of 35 U.S.C. 112. See *Transco Products, Inc. v. Performance Contracting, Inc.*, 38 F.3d 551, 32 USPQ2d 1077 (Fed. Cir. 1994).

In this case, the prior application cited by Applicant is application serial no. 09/575,811, filed 22 May 2000 by inventors including the present Applicant. However, Examiner respectfully notes that the disclosure of 09/575,811, which is directed to a method and device for bandwidth efficient multi-channel optical signal sideband modulation with suppressed carrier, is substantially different from the disclosure of the present application and does not disclose the invention claimed in the present application. For example, Examiner notes that the sets of

Figures in the two applications are completely different, and 09/575,811 does not disclose any information directed to optical networks with rings such as claimed in the present application.

Information Disclosure Statement

3. The information disclosure statement filed 19 November 2002 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each U.S. and foreign patent; each publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has only been partially considered. Examiner has considered the U.S. patent documents cited but not the non-patent literature cited under "Other Documents."

In the letter accompanying the information disclosure statement filed 19 November 2002, Applicant asserted that the copies of the cited documents may be found in prior U.S. Patent Application no. 09/336,134, but 37 C.F.R. 1.98(d) states that these copies are not required to be provided only if such a prior application is relied upon for an earlier filing date under 35 U.S.C. 120. Examiner respectfully notes that 09/336,134 is not a parent of the instant application and Applicant has not cited the prior application with regard to an earlier filing date.

Drawings

4. The proposed drawing change to Figure 8B is acceptable.

5. Figures 1a-b, 2, 3a-b, and 4a-c should each be designated by a legend such as - -Prior Art- - or - - Conventional Art- - because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

6. Claims 6, 26, 62, 74, and 76-85 are objected to because of the following informalities:

Claims 6 and 26 each recite "none of ring bands" in line 1 of the claims. Examiner respectfully notes that the phrases should be changed to "none of *the* ring bands" for grammatical reasons.

Claim 62 recites "each ring" in line 2 of the claim. However, Examiner respectfully suggests that Applicant amend the word "each," since claim 61 on which the claim depends previously recites only "a first ring" and no other rings.

Regarding claim 74, the word "that" should be inserted between "laser" and "operates" in line 2 of the claim.

Appropriate correction is required.

Regarding claims 76-85, the numbering of claims is not in accordance with 37 CFR 1.126. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

In the instant application, there is no claim 75. Misnumbered claims 76-85 have been renumbered claims 75-84 respectively, with all of their corresponding claim dependencies also adjusted where necessary. Applicant should accordingly correct the numbering of the claims in future responses. *Applicant should also note that the claim numbers 75-84 referred to by Examiner throughout this Office Action reflect this renumbering* ***Claim Rejections - 35 USC § 112***

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 11-13, 15, 31-33, 35, 44, 45, 73-75, and 82-84 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 11 recites "the first and second protection fibers" in line 1 of the claim. Claim 31 also recites "the first and second protection fibers" in line 1 of the claim. There is insufficient antecedent basis for this limitation in the claims because claims 1 and 21 on which the claims respectively depend do not recite any fibers. Examiner suggests that claim 11 may depend on claim 10 instead (although claim 10 should be amended to specifically include "protection" fibers); likewise, claim 31 may depend on a similarly amended claim 30.

Claims 12 and 13 depend on claim 11, and claims 32 and 33 depend on claim 31; those claims are therefore also rejected under 35 U.S.C. 112 for the above reason.

Claim 15 recites "the 1x2 band-splitter and the 2x1 coupler" in lines 3-4 of the claim. Claim 35 also recites "the 1x2 band-splitter and the 2x1 coupler" in lines 3-4 of the claim. There is insufficient antecedent basis for this limitation in the claims because claims 1 and 21 on which the claims respectively depends do not recite such a splitter or coupler. Examiner suggests that claim 15 may depend on claim 14 instead and that claim 35 may depend on claim 34 instead.

Claim 44 recites "coupled to each first and second protection fiber" in line 2 of the claim. There is insufficient antecedent basis for this limitation in the claim, since claim 42 (on which the claim directly depends) does not recite first and second protection fibers. Examiner notes that the claim may depend on claim 43 instead. Claim 45 depends on claim 44 and is therefore also rejected under 35 U.S.C. 112 for the above reason.

Claim 73, recites "at least one node in the fiber ring" in lines 1-2 of the claim. There is insufficient antecedent basis for this limitation in the claim because although claim 1, on which the claim depends, recites a method including "an optical network with at least two rings," the claims does not specify "a fiber ring" or "nodes." Examiner respectfully suggests that the claim may depend on claim 67 instead. Claims 74 and 75 depend on claim 73 and are therefore also rejected under 35 U.S.C. 112 for the above reason.

Claim 82 recites "the two fiber loops" in lines 2-3 of the claim. There is insufficient antecedent basis for this limitation in the claim because claim 81, on which the claim depends, previously recites that "the fiber ring comprises a *single* fiber loop" (emphasis added). Claims 83 and 84 depend on claim 82 and are therefore also rejected under 35 U.S.C. 112 for the above reason.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 61-63, 67, 68, and 71-77 are rejected under 35 U.S.C. 102(b) as being anticipated by Johansson (WO 96/32787 A1; Telefonaktiebolaget LM Ericsson, assignee).

Regarding claim 61, Johansson discloses an all optical network (Figure 1a), comprising:

a first ring 10 with at least a first and second protection fibers 5 and 6 that carry all of the optical signal traffic, wherein the optical signal traffic travels in a clockwise direction in the first

protection fiber and in a counter-clockwise direction in the second protection fiber (Figure 1a shows that traffic travels in opposite directions on fibers 5 and 6), and

at least one 1x1 or a 1x2 switch (such as element 20 in Figure 1a or element 'S' in Figures 2a-d) coupled to each of the first and second protection fibers, wherein the 1x1 or 1x2 switch is maintained in an open position when there is no break point in the ring and closed upon an occurrence of a break point in the ring (page 4, lines 17-27; page 5, lines 2-11).

Although Johansson does not use the term "1x1 switch" or "1x2 switch" it would be well understood in the art that the turning on and off of the switches disclosed within the nodes in the manner disclosed by Johansson inherently comprises at least one 1x1 switch or 1x2 switch, since a path is either opened or closed as a result.

Johansson further discloses at least one node in the first ring (such as node 1, shown in Figure 1a) comprising at least one optical element operable to separate received light into a plurality of separate optical signals each having a plurality of signal channels and a plurality of optical filters optically coupled to receive and filter the separate optical signals, respectively, and to extract respective selected signal channels. Figures 4a-4f show a variety of embodiments of elements contained in a node such as node 1, including one wherein the node includes at least one optical element for separating light into a plurality of separate signals with signal channels (i.e., coupler 66 in Figure 4e) and a plurality of filters that receive and filter the signals, and extract selected channels (i.e., the filters shown as double horizontal lines but not explicitly numbered in Figure 4e; Examiner notes that analogous elements are labeled 62 and 64 in Figure 4c).

Regarding claim 62, as well as the claim may be understood with regard to the claim objection above, Johansson discloses that the ring includes multiple nodes (such as nodes 1-4 shown in Figure 1a).

Regarding claim 63, Johansson discloses that each node includes at least one transmitter and one receiver (Figure 1a for example shows that a node includes transmitters T and receivers R).

Regarding claim 67, as similarly discussed above with regard to claim 61, Johansson discloses an optical network (Figure 1a), comprising:

at least one optical fiber ring 10 to carry the same optical traffic in two opposite directions, wherein the optical traffic includes signal channels at different optical channel wavelengths;

a plurality of nodes on the fiber ring (nodes 1-4), each node comprising (see Figure 4e in particular):

an optical power splitter (i.e., the first stage or branch of the coupler element 66) optically coupled to the fiber ring to split a portion of optical power in the fiber ring to produce an optical drop signal having all the channels and to allow for the optical traffic to continue in the fiber ring,

an optical device (i.e., the second stage of coupler 66, which as shown in Figure 4e further divides a signal into three branches) to receive the optical drop signal and to separate optical drop signal into a plurality of separate optical signals each having a plurality of signal channels, and

a plurality of optical filters (i.e., the filters shown as double horizontal lines but not explicitly numbered in Figure 4e) optically coupled to receive and filter the separate signal channels, respectively, and to extract respective selected signal channels; and

an optical switch module (such as element 20 in Figure 1a or element 'S' in Figures 2a-d) optically engaged in the fiber ring to maintain a break point in the fiber ring so that light in the fiber ring cannot re-circulate in a closed optical loop (page 4, lines 17-27; page 12, lines 14-25).

Regarding claim 68, Johansson disclose that the optical switch module operates to create a break point in a path of light when light passing through the optical switch module does not encounter a break point elsewhere in the fiber ring, and the optical switch module operates to close the break point when light passing through the optical switch module encounters a break point elsewhere in the fiber ring (page 4, lines 17-27; page 12, lines 14-25).

Regarding claim 71, Johansson disclose that the optical device may comprise a power beam splitter (i.e., the three-branch coupler 66 shown in Figure 4e) to separate the optical drop signal into the separate optical signals each having signal channels identical to signal channels in another separate optical signal.

Regarding claim 72, Johansson discloses that the optical filters may be tunable optical filters operable to tune a selected signal channel and to select the selected signal channel (page 15, lines 2-6, lines 13-15; and page 16, lines 27-31).

Regarding claim 73, as well as it may be understood with regard to 35 U.S.C. 112 discussed above (Examiner again notes that the claim may depend on claim 67), Johansson discloses that at least one node in the fiber ring further comprises:

a plurality of laser transmitters to produce new signal channels at different wavelenegths (not explicitly shown in Figure 4e as providing the wavelengths 1-3, but Johansson clearly discloses laser transmitters T in embodiments such as shown in Figure 1b; see also page 9, lines 25-35)

an optical multiplexer (part of coupler 28 in Figure 4e) to receive and combine the new signal channels; and

an adding optical splitter (the upper part of coupler 68 in Figure 4e connected to the main ring) optically coupled to the fiber ring to add the new signal channels from the optical multiplexer to the fiber ring.

Regarding claims 74 and 75, Johansson disclose that the lasers may be fixed wavelength or tunable lasers (page 9, lines 25-35; page 14, lines 30-34)

Regarding claim 76, Johansson discloses that the fiber ring 10 comprises two separate fiber loops 5 and 6 that carry the same optical traffic in two opposite directions, respectively (see Figure 1a; for example).

Regarding claim 77, Johansson discloses that the optical switch module is optically coupled to both of the two fiber loops to cause a break point in each of the two fiber loops where there is no break point elsewhere in each fiber loop (page 4, lines 17-27; page 12, lines 14-25; and also page 13, lines 18-19).

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. Claims 64-66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Solheim et al. (US 6,192,173 B1) in view of Vanoli et al. (US 5,712,716 A).

Regarding claim 64, Solheim et al. disclose a method of transmitting optical ring traffic (Figures 3 and 4), comprising:

providing a broadcast-and-select optical network 400 comprising at least one fiber ring;

transmitting signal channels at different channel wavelengths in the fiber ring; and

using a broadband optical splitter 310 in the fiber ring to split a portion of optical power in the fiber ring to produce an optical drop signal having all of the signal channels (i.e., the signal on fiber segment 320; column 6, lines 22-37);

Solheim et al. do not explicitly disclose separating the drop signal into individual signals and subsequently filtering each individual optical signal to extract as selected channel, but they do further disclose that the optical drop signal is demultiplexed using a demultiplexer such as element 320 (column 6, lines 35-55). It is well known in the art that the demultiplexing function such as already disclosed by Solheim et al. may be implemented by splitting a signal into a plurality of signals each having a plurality of signal channels followed by filtering each signal to obtain a selected channel. Vanoli et al. in particular explicitly teach how a splitter 10 connected to filters 11a-d may implement a demultiplexer in the above explained manner (Figure 1; column 8, lines 1-9; Examiner notes that the element clearly marked "splitter" in Figure 1 is numerically labeled "11" like the filters, but it is referred to in the specification as element 10).

It would have been obvious to a person of ordinary skill in the art to specifically provide the steps of separating and filtering as taught by Vanoli et al. in the method disclosed by

Solheim et al. simply as a well known way to properly implement the demultiplexing function already disclosed.

Further regarding claim 64 and also claims 65 and 66, Solheim et al. disclose a network with a plurality of interconnected nodes in a ring but does not specifically disclose that the nodes may be connected into more than one ring in the network or in a ring-to-mesh configuration. However, it is well known in the art that a plurality of nodes in a network may be variously connected as however desired by users. Some well-known examples of how a group of nodes may be connected include the nodes connected into one ring; two rings connected together, a mesh, a ring connected to a mesh, etc.

It would have been obvious to a person of ordinary skill in the art to specifically provide and connect additional nodes such as disclosed by Solheim et al. into multiple rings or in a ring-to-mesh configuration as an engineering design choice of a network topology that provides whatever connections are desired between users of each node.

Regarding the limitation, "transmitting a sufficient number of wavelengths," Examiner notes that claim 64 does not recite a specific number of wavelengths, only that the number is "sufficient" to "eliminate wavelength converters and regenerators between rings in a network." Similarly, claims 65 or 66 do not recite a specific number of wavelengths, only that the number is "sufficient to eliminate OADMs" in a ring-to-ring or ring-to-mesh network. Examiner respectfully submits that it is well understood in the art that it is possible for a network to comprise only several nodes (for example, fewer than 10 nodes). It would be further well understood in the art that a separate wavelength could be easily provided for each node in such a small network, thus eliminating the need for wavelength converters, regenerators, and OADMs

since wavelength reuse would be not necessary. Applicant's own specification on page 3 and in Figures 3a-b acknowledges that known broadcast-and-select type networks may be implemented without wavelength converters, regenerators, or OADMs.

Regarding claims 64-66, it would have been obvious to a person of ordinary skill in the art to specifically provide a "sufficient" number of wavelengths in the method disclosed by Solheim et al. simply in order to properly implement the broadcast-and-select type network already disclosed. One in the art would have been particularly motivated to ensure that a sufficient number of wavelengths were provided in order to avoid implementing a more complicated system including converters and/or OADMs if the number of nodes was small enough to not make it necessary to use a design other than a simple broadcast-and-select system.

13. Claims 69 and 70 are rejected under 35 U.S.C. 103(a) as being unpatentable over Johansson in view of Vanoli et al.

Regarding claims 69 and 70, Johansson discloses an optical network including nodes with optical devices and filters as discussed above with regard to claim 67.

Regarding claim 69 in particular, Johansson discloses that the network further comprises a plurality of optical power splitting devices coupled to receive the channel groups, respectively, wherein each optical power splitting device separates a corresponding channel group into a plurality of signals each having all channels in the corresponding channel group. Johansson disclose that each node may include a power splitter such as the first stage of the coupler element 66 shown in Figure 4e for splitting a signal from the main fiber ring that contains a group of channels.

Regarding both claims 69 and 70, Johansson does not specifically disclose that each optical device in each node comprises a plurality of fixed wavelength selectors in addition to the plurality of optical filters already discussed above with regard to claim 67. In other words, Johansson discloses elements that are represented by double horizontal lines but not explicitly numbered in Figure 4e that receive and filter the separate signal channels and extract respective selected signal channels but does not disclose further filters/wavelength selectors.

However, fixed wavelength and tunable filters are well known in the optical communications art for removing unwanted wavelengths from a multi-channel signal. In particular, Vanoli et al. teach that additional filters (one of the filter groups 56a-d or 11a-din Figure 14), comprising either fixed wavelength selectors or tunable OADM devices, may be included an optical receiving station 7 with an optical device already comprising filters (the other filter group 56a-d or 11a-d) related to the receiving section of the optical node disclosed by Johansson. Vanoli et al. teach the filters comprise fixed wavelength selectors and tunable filters (column 21, lines 11-39).

It would have been obvious to a person of ordinary skill in the art to include fixed wavelength selectors or tunable devices as taught by Vanoli et al. in addition to the filter elements already disclosed by Johannson in order to further filter unwanted channels from the main signal and ensure that the desired channel is properly extracted and received.

14. Claims 78-80 are rejected under 35 U.S.C. 103(a) as being unpatentable over Johansson in view of Solheim et al.

Regarding claims 78-80, Johansson discloses an optical network as discussed above with regard to claims 67 and 77.

Regarding claim 78, Johansson disclose that the optical switch module may be located within a node (see Figure 1a, for example) but does not specifically disclose that the optical switch module is located within the central hub, since Johansson does not specifically disclose that the system includes a central hub. However, ring networks are generally well known in the art, and it is further well known in the art that such networks may include a node designated as a central hub. In particular, Solheim et al. teach an optical ring network, related to the one disclosed by Johansson, including nodes 410, 420, 430, and 440 arranged in a fiber ring (Figure 4). Solhiem et al. further teach that one of the nodes (node 410) may be designated a master node (i.e., a central hub; column 6, lines 64-67; column 7, lines 1-13). It would have been obvious to a person of ordinary skill in the art to include a central node as taught by Solheim et al. in the network disclosed by Johansson in order to maintain information related to the other nodes or provide a node that may interface with another network, as Solheim et al. suggest (column 8, lines 7-10). It would have been further obvious to a person of ordinary skill in the art to locate the switch module disclosed by Johansson in the central node of the system suggested by Johansson in view of Solheim et al. since Johansson discloses that such switch modules may in located in all of the add/drop nodes in the network (page 4, lines 15-22) and Solheim et al. teach that a central hub node may basically comprise an add/drop node similar to the other nodes (column 7, lines 10-11).

Regarding claims 79 and 80, Johansson discloses that the network further comprises at least one secondary optical switch in each of the two fiber loops outside the central hub, wherein the secondary optical switch in each fiber loop is located within a node (again, Johansson discloses that more than one node includes a switch module; page 4, lines 15-22).

15. Claim 81 is rejected under 35 U.S.C. 103(a) as being unpatentable over Johansson in view of Nathan et al. (US 5,870,212 A).

Regarding claim 81, Johansson discloses an optical network as discussed above with regard to claim 67 above but does not specifically disclose that the fiber ring comprises a single fiber loop. However, ring networks are generally well known in the art, and it is further well known in the art that such networks may be implemented using two fiber rings for carrying traffic as specifically disclosed by Johansson or using a single fiber loop that carries traffic in opposite directions using multiplexing. In particular, Nathan et al. teach an optical ring network, related to the one disclosed by Johansson, including nodes arranged in a fiber ring (Figures 2 and 7). Nathan et al. further teach that the ring may comprise two loops as shown in Figure 2 or one loop as shown in Figure 7 as an engineering design choice (column 4, lines 66-67; column 5, lines 1-6). It would have been obvious to a person of ordinary skill in the art to use a single loop as taught by Nathan et al. instead of the two loops disclosed by Johansson as an engineering design choice of a way to implement the ring network connections already disclosed. One in the art would have been particularly motivated to use a single fiber loop in order to spare the expense of installing additional fiber.

16. Claims 82-84 rejected under 35 U.S.C. 103(a) as being unpatentable over Johansson in view of Nathan et al. as applied to claim 81 above, and further in view of Solheim et al.

Regarding claims 82-84, Johansson in view of Nathan et al. describe an optical network as discussed above with regard to claim 81.

Regarding claim 82, as well as the claim may be understood with regard to 35 U.S.C. 112 discussed above, Johansson disclose that the optical switch module may be located within a node

(see Figure 1a, for example) but does not specifically disclose that the optical switch module is located within the central hub, since Johansson does not specifically disclose that the system includes a central hub. However, ring networks are generally well known in the art, and it is further well known in the art that such networks may include a node designated as a central hub. In particular, Solheim et al. teach an optical ring network, related to the one disclosed by Johansson, including nodes 410, 420, 430, and 440 arranged in a fiber ring (Figure 4). Solhiem et al. further teach that one of the nodes (node 410) may be designated a master node (i.e., a central hub; column 6, lines 64-67; column 7, lines 1-13). It would have been obvious to a person of ordinary skill in the art to include a central node as taught by Solheim et al. in the network described by Johansson in view of Nathan et al. in order to maintain information related to the other nodes or provide a node that may interface with another network, as Solheim et al. suggest (column 8, lines 7-10). It would have been further obvious to a person of ordinary skill in the art to locate the switch module disclosed by Johansson in the central node of the system suggested by Johansson in view of Nathan et al. and Solheim et al. since Johansson discloses that such switch modules may in located in all of the add/drop nodes in the network (page 4, lines 15-22) and Solheim et al. teach that a central hub node may basically comprise an add/drop node similar to the other nodes (column 7, lines 10-11).

Regarding claims 83 and 84, Johansson discloses that the network further comprises at least one secondary optical switch in each of the two fiber loops outside the central hub, wherein the secondary optical switch in each fiber loop is located within a node (again, Johansson discloses that more than one node includes a switch module; page 4, lines 15-22).

Allowable Subject Matter

17. Claims 1-10, 14, 16-30, 34, 36-43, and 46-60 are allowed, although Applicant should note the claim objections above to claims 6 and 26 (among others).

18. Claims 11-13, 15, 31-33, 35, 44, and 45 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action.

19. The following is a statement of reasons for the indication of allowable subject matter:

The prior art, including Johansson and Solheim et al., does not disclose or fairly suggest an optical network or method of transmitting optical signal traffic including all of the elements, steps, and limitations as specifically recited in each of claims 1, 21, 41, and 42, and particularly wherein each ring is provided with its own distinct ring band of the optical signal traffic and each receiver is configured to receive only wavelengths in a ring band that is designated for its associated ring.

Conclusion

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christina Y. Leung whose telephone number is 703-605-1186. The examiner can normally be reached on Monday to Friday, 6:30 to 3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 703-305-4729. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4700.

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